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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,998	12/30/2003	Udayan Dasgupta	TI-35831	8261
23494 7590 08/15/2007 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER PHU, PHUONG M	
			ART UNIT 2611	PAPER NUMBER
			NOTIFICATION DATE 08/15/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com
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Office Action Summary

Application No.

10/748,998

Applicant(s)

DASGUPTA ET AL.

Examiner

Phuong Phu

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/30/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This Office Action is responsive to the Election filed on 6/28/07. Accordingly, claims 1-9, 23 and 24 are currently pending; and claims 10-22 and 25-27 are canceled.

Specification

2. The disclosure is objected to because of the following informalities:

-On page 1, line 7, "Ser. No. xx/xxxxxx" should be replaced with a correct serial number.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-9, 23 and 24 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-9, 23 and 24 are directed to a mathematical algorithm for computing distances between a point and other points which is not statutory subject matter. In view of application's disclosure, the claims are not limited to tangible embodiments.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2611

6. Claims 1-9, 23 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01.

Claim 1 omit essential step(s) showing functional interrelationship between step “determining a first point on a grid nearest to the received point” with step “computing a second point closest to the received point inside a specified area; computing a third, fourth, and fifth point, wherein each point is a member of a different coset and each point is the closest point in its coset to the received point; and computing a distance from the received point to each of the second, third, fourth, and fifth points”. The omission renders the claim unclear on whether the result of the former affects the latter or the result of the latter affects the former.

Claims 2-9, 23 and 24, depended on claim 1, are therefore also rejected.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Holmes et al (7,224,743).

-Regarding claim 1, see figures 6 and 12 and col. 7, lines 51-67, col. 10, line 14 to col. 11, line 31, Holmes et al discloses a method for computing distances between a received point (I, Q) (see point (I₀, Q₀) shown in figure 12) and four points (0,0), (0,1), (1,0) and (1,1) (see figure

Art Unit: 2611

12) in a two-dimensional grid (Q-channel axis, I-channel axis) with a constellation configurable to represent a number of bits greater than three (see figure 6), wherein each of the four points belong to a unique coset (coset 0, coset 1, coset 2 or coset 3) in the constellation, the method comprising:

procedure (inherently included) of determining point $(I_0, 0)$, as a first point, on grid (I-channel axis) in order to obtain the I-coordinate (I_0) of the received point, the grid (I-channel axis) nearest to the received point in comparison with the grid (Q-channel axis), (the procedure of determining point $(I_0, 0)$ considered here equivalent with the limitation "determining a first point on a grid nearest to the received point");

procedure (inherently included) of computing to obtain a second point $(0, 0)$ closest to the received point (I_0, Q_0) inside a specified area, (as shown in figure 12);

procedure (inherently included) of computing to obtain a third, fourth, and fifth point $((1, 0), (0, 1), (1, 1))$ (see figure 12), wherein each point is a member of a different coset and each point is the closest point in its coset to the received point (see col. 10, line 14 to col. 11, line 31); and

procedure of computing a distance from the received point to each of the second, third, fourth, and fifth points (see col. 10, lines 14-60).

-Regarding claim 23, Holmes et al discloses that the method can be used to decode a received point in a communication system (see col. 1, lines 9-30).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2611

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Holmes et al in view of Shaikh (6,594,319).

-Regarding claim 24, Holmes et al does not teach that the communications system is an asymmetric digital subscriber line (ADSL) compliant system, as claimed.

However, Holmes et al invention directs to techniques for decoding communication signals that have been encoded using trellis coded modulation (see col. 1, lines 9-14).

Using trellis coded modulation in asymmetric digital subscriber line (ADSL) compliant systems is well-known in the art. For instance, Shaikh teaches that it is well-known in the art in using trellis coded modulation "trellis encoding" in asymmetric digital subscriber line (ADSL) compliant systems (see col. 1, lines 40-50).

Therefore, for an application, it would have been obvious for one skilled in the art to be able to apply Holmes et al method to decode communication signals in a ADSL compliant system, as taught by Shaikh, wherein the signals have been encoded using a trellis coded modulation, in order to recover the signals at a receive site, as expected.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (8:00 AM - 4:30 PM).

Art Unit: 2611

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Phuong Phu
Phuong Phu
8/8/07

PHUONG PHU
PRIMARY EXAMINER

Phuong Phu
Primary Examiner
Art Unit 2611